

# **Student Perceptions of College Opportunities**

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*PRELIMINARY DRAFT*

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## I. Introduction

Despite spending large sums to promote widespread access to college, we know surprisingly little about the impact of alternative public interventions on students' and parents' investment decisions. A large share of public subsidies to higher education come in the form of direct state appropriations to public post-secondary institutions, which totaled \$63 billion annually in 2001.<sup>1</sup> In addition, the federal government provided more than \$8 billion in means-tested grants to undergraduates during the 2000-01 school year and guaranteed \$37 billion in student loans (and paying the interest on roughly half of that loan volume while students are in school).<sup>2</sup> States added \$5 billion in grant aid to students, much of it means-tested. Yet the gaps in college enrollment by family income did not close during the Seventies, when the main federal grant program for low-income students was initiated. Moreover, the gaps in college enrollment by race and by family income seem to have been widening since 1980, as the earnings differentials associated with college degree completion rose dramatically. In this paper, I first summarize the evidence on widening gaps in college enrollment by race and family income. I then pose two puzzles from the literature which highlight how much we still need to learn about students' and parents' decisions to invest in college.

The first puzzle involves the apparent inconsistency between students' responsiveness to college costs and the rises in college enrollment in response to rising college wage differentials since 1980. The longstanding literature on the impact of tuition and financial aid on college

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<sup>1</sup>Grapevine: A National Database of Tax Support for Higher Education, Illinois State University, James C. Palmer (ed.).

<sup>2</sup>College Board, *Trends in Student Aid, 2001*, p. 7.

going typically reports that a \$1000 difference in tuition costs is associated with a 3-5 percentage point difference in enrollment. However, between 1980 and 1992, when the college wage differentials were expanding dramatically, the proportion of high school graduates enrolling in college grew by only 7 percentage points. College enrollment rates for those from the lowest income families were flat. In other words, youth seem to be much more sensitive to costs than they seem to be to the present value of future earnings differentials. I evaluate the evidence on the potential importance of borrowing constraints in accounting for the discrepancy.

The second puzzle is related to students' over-optimistic plans regarding future educational attainment as late as their senior year in high school. A much higher fraction of students report plans to attend a four-year college the following fall than actually do. This is particularly striking in light of findings that students and parents are overly pessimistic in overstating the costs of college. I provide some evidence on the plans and expectations of students from several high schools in the Boston area.

Both puzzles highlight just how little we understand about parents' and students' decisions regarding college. Given the magnitude of the public investment in subsidies to higher education and the importance of the college enrollment decisions to future growth and income inequality, such gaps in our knowledge are particularly regrettable.

## **II. Persistent and Widening Gaps in College-Going by Family Income**

There are large gaps in college-going by family income. The top panel of Table 1 reports differences in college-going among seniors from the high school classes of 1980/82, as

reported in Ellwood and Kane (2000).<sup>3</sup> Eighty percent (80%) of the students from the top income quartile attended some type of postsecondary institution within 20 months of their high school graduation, as compared with fifty-seven percent (57%) of those from the lowest income quartiles. The gaps by family income were particularly large in four-year college entrance, with 55 percent of the highest-income youth attending a four-year college at some point and only 29 percent of the lowest income youth.

Moreover, although the evidence is somewhat more sparse, these gaps appear to be widening over time. It is surprisingly difficult to keep track of differences in college-going by family income with the data available in the federal statistical system. The annual October Current Population Survey, for instance, collects data on college enrollment of youth, but only collects income information for their current household, which is not necessarily their parents' household.<sup>4</sup> One observes parental income only if one is a member of one's parents' household. Moreover, the major longitudinal surveys collected by the National Center for Education Statistics (the High School and Beyond and National Education Longitudinal Study of 1988) which do contain information on the income of parents while their youth were in high school, asked about parental family income in slightly different ways in different years. The results in the bottom panel of Table 1 represent an attempt by Ellwood and Kane (2000) to define parental

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<sup>3</sup>These data rely upon the parent-reported family income data, rather than the less-reliable student responses. If students attended more than one type of postsecondary institution, they were categorized as four-year college if they ever attended a four-year college and, if not, as two-year college entrants if they ever attended a two-year college.

<sup>4</sup>For an analysis using the October CPS, see Hauser (1992).

family income quartiles in consistent ways using the NELS and High School and Beyond.<sup>5</sup>

Although college entry rates grew for all groups between the high school classes of 1980/82 and 1992, the increases were larger for middle and higher income families. For example, there was a 10 percentage point increase in the proportion of the highest income youth attending some postsecondary institution between 1980/92 and 1992. Moreover, the increase in postsecondary schooling was largest for high-income youth attending four-year colleges, rising from 55 percent to 66 percent. In contrast, we estimate that there was only a 3 percentage point rise in postsecondary entry for youth from the lowest income quartile and a 1 percentage point decline (albeit statistically insignificant) in the proportion of low-income youth attending a four-year college.

In other words, the persistently large gaps in college-going by family income appear to be widening. However, even if the gaps in college-going by family income were not widening, the rising payoff to college since 1980 has magnified the consequences of the pre-existing gap in college entry by family income. While the gap in postsecondary training between the highest and lowest-income quartiles grew by one-third (from 23 percentage points to 30 percentage points), the earnings differentials between college entrants and high school graduates more than doubled between 1980 and 199

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<sup>5</sup>Both sets of estimates are based upon parent-reported, not student-reported, family income.

*Widening Gaps in College Enrollment by Race, Despite Closing of the Racial Gaps in H.S. Graduation and Test Scores*

While the Current Population Survey makes it difficult to track college-going rates by parental income level, it is possible to track college-going rates by race. Given the correlation between race and income, any increase in income gaps ought to be reflected in a widening of the racial gap. Figure 1 reports the trend in the percentage of 18-24 year-olds enrolled in college by race/ethnicity between 1972 and 1998.<sup>6</sup> The panel on the left reports enrollment rates by race; the panel on the right reports the difference in enrollment rate relative to whites for both blacks and Hispanics each year. After remaining flat for most of the Seventies, enrollment rates began to rise during the Eighties for all groups. The proportion of white 18-24 year-olds enrolled in college increased from 27 percent to 41 percent between 1980 and 1998. Enrollment rates for African American youth also increased over that period-- from 19 to 29 percent-- but the magnitude of the increase for African Americans (10 percent) was smaller than the magnitude of the increase for white non-Hispanics (14 percent).<sup>7</sup> As a result, as reported in the right panel of Figure 1, the gaps in college enrollment by race also increased.

The widening racial gaps in college enrollment rates are particularly striking when contrasted with the gradual closing of the racial gaps in high school graduation and test performance over the same period. Figure 2 reports the trends in high school status drop-out rates (the proportion of youth not enrolled in school who do not have a high school diploma) for

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<sup>6</sup>The data in Figure 1 were drawn from the National Center for Education Statistics, *Digest of Education Statistics 1999*, Table 139.

<sup>7</sup>The increases over the time period were larger for women than for men.

16-24 year-old youth by race/ethnicity, from 1972 through 1998. As in Figure 1, the left panel of Figure 2 reports the trends in high school status dropout rates by race/ethnicity; the right panel reports the differences in high school dropout rates for blacks and Hispanics relative to white non-Hispanics. Throughout much of the period, high school dropout rates were gradually falling for all three groups. However, the decline among African Americans accelerated between the mid-Seventies and the mid-Eighties, closing somewhat the black-white gap in high school graduation rates. Between 1975 and 1988, the status dropout rate fell from 11.4 to 9.6 percent for white non-Hispanics (a 1.8 percentage point drop) and from 22.9 to 14.5 percent for black non-Hispanics (a 8.4 percentage point drop).

Some portion of this closing racial gap in high school dropout rates may be attributable to a rise in GED receipt, rather than an increase in high school diplomas. However, it is unlikely that an increase in GED receipt among African Americans accounted for all of the closing. The Current Population Survey first began to distinguish between those completing high school diplomas and those completing GED's in 1988. In 1990, a small but roughly equal proportion of black and white 18-24 year-olds reported having completed a GED or other equivalent rather than a regular high school degree (5 percent).<sup>8</sup>

Figure 3 reports the trend in math and reading test scores on the National Assessment of Educational Progress exams by race/ethnicity for 13 and 17 year-olds since 1975.<sup>9</sup> For both age

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<sup>8</sup>U.S. Department of Health and Human Services, *Trends in the Well-Being of America's Children and Youth*, 2000, p. 311.

<sup>9</sup>For a more detailed discussion of the closing gaps in test performance between blacks and whites, see Jencks and Phillips (eds.), *The Black-White Test Score Gap* (1998), particularly chapters 5 and 6.

groups, in both reading and math, blacks and Hispanics were closing the gap in achievement relative to white non-Hispanics. A student-level standard deviation on the NAEP reading test was approximately 40 points over this time period. Between 1975 and 1988, the black-white gap in reading test scores at age 17 close from approximately 1.25 standard deviations to .5 standard deviations. Since 1988, it seems that the gap has opened up again slightly, but the gap remains considerably smaller than it was in 1975.

### *Trends in Educational Attainment*

Figure 4a reports trends in the proportion of 25-27 year-olds reporting any postsecondary enrollment by race and gender. Three facts are worth noting in Figure 4a.<sup>10</sup> First, the timing of the rise in the proportion of 25-27 year-olds reporting ever having entered college matches roughly with the timing of the rise in college enrollment rates of 18-24 year olds. The rise for 25-27 year-old White non-Hispanic began in approximately 1987, meaning that the increase began with the cohort turning 18 in 1979-- the same year in which college enrollment rates began to rise. Second, because it reflects the “stock” of students enrolled in college and not the

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<sup>10</sup>As reported in Figure 4a, the rise in college entry since 1980 was larger for women than for men. Administrative data published by the U.S. Department of Education confirms that women now account for a disproportionate share of enrollment, and more than half of the associate, bachelors and master’s degrees conferred. As argued in Kane (1994) and Charles and Luoh (2001), it is difficult to attribute the widening gap by gender to any differences in the rise in the education wage premium since 1980, since the apparent rise in the payoff to schooling was quite similar for men and women through the early Nineties. Gottschalk and Pizer (1999) also report similar increases in the experience differential for college-educated men and women. There may be other explanations, such as advantages in non-wage characteristics of jobs for college graduates (e.g. flexibility in hours), that could account for the large increases in enrollment by women. However, this important trend is currently not very well understood.



“flow” of new entrants, the magnitude of the rise in college enrollment of 18-24 year-olds somewhat overstates the rise in college entry. As we saw in Figure 1, the proportion of 18-24 year-olds enrolled in college grew by 31 percent between 1983 and 1994. (These cohorts should roughly correspond to the cohorts of 25-27 year-olds in 1988 and 1999.) The proportion of these cohorts *ever* entering college also rose (from 47 to 57 percent), but only by two-thirds as much (21 percent).

Figure 4b reports the proportion of 25-27 year-olds with a BA degree. Beginning in 1992, the format of the educational attainment question changed. As a result, we have to be careful in comparing rates of degree completion before and after 1992. Keeping the appropriate caveats in mind, the increases were roughly consistent with the rise in the proportion ever-entering college. Between 1988 and 1999, the proportion of 25-27 year-olds with a BA degree or higher rose by 23 percent (from 22.1 to 27.2 percent). On a proportionate basis, the rise in BA degree completion roughly matched the rise in college entry, implying that there was little decline in college completion rates over the period when college entry rates were rising.<sup>11</sup> Presumably, the larger proportionate rise in the “stock” of college enrollees than in the “flow” of college entrants or the “flow” in college completers reflects an increase in part-time enrollment and a lengthening time-to-degree.<sup>12</sup>

Figure 4c reports the racial/ethnic gaps in educational attainment among 25-27 year-olds over time and by gender. The top panel reports the gaps in the proportion of 25-27 year-olds reporting to have entered college at some point; the bottom panel reports the gaps BA degree

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completion rates for the same age group. Just as Figure 1 indicated a widening gap in college enrollment rates among 18-24 year-olds by race, there appears to have been a widening in the gaps in educational attainment among 25-27 year-olds by race. Moreover, the racial/ethnic gaps widened in the proportion ever-entering college as well as in the proportion completing BA degrees.

### **III. Exaggerated Responses to College Prices and Muted Responses to Rising College Wage Differentials**

After growing slowly between 1965 and 1980, tuition levels began rising more rapidly than overall inflation between 1980 and 1999.<sup>13</sup> Figure 5 portrays the trend in tuition levels at public and private, 2-year and 4-year universities. Between 1965 and 1980, the average tuition at a private 4 year institution had risen only 22 percent faster than inflation. However, between 1980 and 1999, tuition at private 4-year institutions rose 136 percent in real terms. After rising by 17 percent in real value between 1965 and 1980, the average public 4-year tuition rose by 114 percent between 1980 and 1999.

Over the years, a large literature has developed, studying the impact of various types of tuition and financial aid policies on college-going. In their review of the literature on student responsiveness to changes in college cost, Leslie and Brinkman (1988) report a consensus estimate that a \$1000 change in college costs (\$1990) is associated with an approximately 5 percentage point difference in college enrollment rates. Table 2 summarizes the results from

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<sup>13</sup>All series were adjusted for inflation using the CPI-U-X1.

three recent sets of studies, published since the Leslie and Brinkman review: those that use differences in public tuition levels between states and over time, those that evaluate the impact of financial aid policies that operate outside the usual need-analysis system, and those evaluating changes in financial aid policy operating through the regular financial aid process.

The first three papers use between-state differences in state tuition policy and essentially compare the college entry rates of otherwise similar youth in high and low-tuition states. The empirical strategy in this literature uses the assumption that the price that is relevant for the marginal student is the tuition at public institutions in their state and evaluate the effect of tuition and college-going by comparing college-going rates in high and low-tuition states. Such studies also assume that the supply of college slots is perfectly elastic: given a change in price, it is solely student demand which determines enrollment and not the supply of college slots.

Two characteristics of these studies deserve comment: First, although they use 3 different data sets-- the October Current Population Survey, the National Longitudinal Survey of Youth and the High School and Beyond-- each generates similar results. A \$1000 difference in tuition is associated with a 6 percentage point difference in college-going. Indeed, these estimates are quite consistent with the older literature summarized by Leslie and Brinkman.

Second, a weakness of these studies is that they rely on relatively fixed differences in tuition levels between states. For instance, California has been a relatively low-tuition state for the past forty years. California has also built a number of community colleges around the state. One may be attributing to tuition policy the effect of these other policy differences, such as the construction of community colleges. As a result, Kane (1999) used administrative data to look at what happens to enrollments within a state when it raises tuition. Interestingly, one sees

comparable effects of tuition changes within states over time as one would estimate looking across states.

Despite strong evidence of student and parent responsiveness to tuition costs, the evidence for the impact of the Pell Grant program is much weaker. Lee Hansen (1983) first noted that there had been little evidence of a disproportionate rise in college enrollment by low-income youth during the Seventies, when the Pell Grant program was established. Although that paper was criticized for relying too heavily on two years' of data and for including males, whose decisions may have also been affected by the end of the Vietnam War, later work (Kane (1994)) confirmed that the result was not sensitive to the choice of annual end-points or to the inclusion of males. Manski (1993) also reported little evidence of a disproportionate growth in BA completion by low-income youth graduating from high school between 1972 and 1980.

One hypothesis to reconcile the estimates of tuition impacts with the failure to find an increase in enrollment by low income youth following the establishment of the Pell Grant program is that students are expected to make a significant up-front investment to apply to college and to apply for financial aid, before they learn anything about the amount of aid available, whereas they can read about a tuition increase in the newspaper or see it in college's application materials.

Also cited in Table 2, Sue Dynarski has recently estimated the impact of two other programs which operated outside of the federal need-analysis framework: one looking at the impact of the cessation of tuition benefits for Social Security survivors and the other evaluating the effect of the Hope Scholarship program in Georgia. Dynarski (1999) found that after the discontinuation of the Social Security Student Benefit program, college entry by students with

deceased parents declined by 19.4 to 25.6 percentage points relative to other youth. To convert this estimate to a similar scale reported above, Dynarski calculated that the value of the benefit program had been roughly \$5300 (\$1990). This implies an impact of 3.7 to 4.8 percentage points per thousand dollar change in price.

In a second paper, Dynarski studied enrollment rates for youth in Georgia relative to other southern states, before and after the Hope Scholarship program was initiated in that state. She estimates that the program increased college enrollment rates of 18 to 19-year-olds by 7.0 to 7.9 percentage points. Given the value of the Hope Scholarship, this estimate converts to an estimate of 3.1 to 3.5 percentage points per \$1000 difference in cost.

Interestingly, because both programs operate outside the typical need analysis system, eligibility was known *a priori*, and did not require one to submit a FAFSA form and wait for an award letter to know whether or not one qualified for the aid. As such, both financial aid programs operated similarly to a tuition increase, which is relatively costless to anticipate. In contrast, the Pell Grant program requires remarkable foresight. One has to fill out a FAFSA, be assigned an expected family contribution and receive an award letter from a school simply to learn how much federal aid is on offer. It may not be a coincidence that the estimated impacts of such non-traditional forms of aid and tuition increases are so similar, and larger than the apparent impact of the establishment of the Pell Grant program.

#### *Interaction between Tuition and Family Income*

Manski and Wise (1983), Radner and Miller (1970), Bishop (1977), Kohn et. al. (1976) all report greater responsiveness to tuition differences among those from lower income quartiles.

More recently, McPherson and Schapiro (1991) and Kane (1994 and 1995) also find greater impacts of tuition on the enrollment decisions of low-income youth. Ellwood and Kane (2000) reported findings with the NELS data that are somewhat sensitive to specification. In some specifications they find an interaction effect, but not in others. Cameron and Heckman (1998) also fail to find robust evidence of an income interaction effect: although their point estimates show decreasing effects of tuition as parental income rises, they could not reject the hypothesis tuition has similar effects at varying income levels.

Table 3 provides one set of estimates of the effect the tuition increases of the Eighties and Nineties may have had on racial and income gaps in college-going. The estimated effects of a \$1000 change in tuition are drawn from Kane (1994), who used cross-sectional differences between states in tuition levels at public four-year colleges to estimate the impacts on college enrollment rates of 18-19 year-old high school graduates. The estimates in Kane (1994) reported strong interactions between income and the relationship of tuition to college-going for whites, but not for blacks. One potential explanation is the large wealth gap between blacks and whites of equal income. An alternative explanation is that there were too few high-income blacks in the sample with which to estimate an effect.

Between 1980 and 1992, the average public four-year tuition rose by \$824 in \$1988. If we were to simply multiply that change by the estimated marginal impact of tuition on college-going among blacks and whites of various income levels, we would have expected a 2.4 percentage point widening of the gap in college enrollment by income. That is about one-third of the actual widening in college entry among recent high school graduates by family income reported in Ellwood and Kane (2000).

Tuition is estimated to have a larger impact on college enrollment for African Americans at all income levels. The bottom panel of Table 3 reports similar estimates of the likely effect of a tuition increase on the racial gap in college enrollment. Aside from the correlation of race with income, one might have expected a rise in tuition to have led to a widening of the racial gap. The correlation of income and race would have contributed as well. The estimates at the bottom of the table suggest that one might have expected the racial gap to grow by 4.5 percentage points, based simply on the rise in tuition at the average public four-year college. This was approximately half as large as the actual widening.

Not included in the above decomposition is the potential effect of a decline in the real value of federal financial aid. Between 1980 and 1992, the real value of the Pell Grant fell by \$564 in \$1988. Pell Grants are targeted at those in the bottom quartile of family incomes. If Pell Grant aid were to have similar effects on college-going as the estimated impact of tuition above, the decline in aid would have accounted for an additional 3 percentage point widening in the gap between the highest and lowest-income groups. In other words, if one were to combine the tuition and Pell Grant impacts, one could account for more than half of the widening between the top and bottom income quartiles. However, as noted above, this is probably attributing too much to the effect of costs on the widening gaps, since there is little evidence that the Pell Grant program has had similar effects of college-going as tuition policy.

### *Comparatively Sluggish Response to Rising Returns to College*

Parents and students appear to be extremely sensitive to tuition policies, at least relative to their responsiveness to the rise in the labor market payoffs to college. Recall from Table 1,

there was a 7 percentage point increase in college entry by high school graduates between 1980/82 and 1992, from 68 percent to 75 percent. This seems large, until you realize that the rise in college enrollment witnessed during the Eighties was roughly as large as we might have expected to see in response to a \$1000 to \$1500 increase in annual tuition, based upon the empirical estimates cited above. For someone who was considering being in school over 4 years, this would have amounted to a \$3700 to \$5500 increase in anticipated expense over 4 years (using a discount rate of 6 percent).

Obviously, the actual payoff of a college degree for the cohort of youth graduating from high school in 1992 remains to be seen, since they have yet to enjoy the benefit of a full career. However, it is possible to form a reasonable estimate based upon contemporaneous evidence. And any such estimate would likely suggest that the payoffs to college have risen much more than \$5500 in present value. Suppose youth considering college formed an expectation of the payoff to college by looking around themselves at people of varying ages and educational attainment to form an estimate of the value of a college degree. Among 25-34 year-old males, high school graduates working full-year, full-time earned \$26,984<sup>14</sup> in 1980 while college graduates earned \$34,096. The differential in annual earnings between the two educational groups had grown from \$7,112 in 1980 to \$14,579 by 1992. The differential in annual income among 35-44 year olds had grown from \$16,486 per year to \$24,391; \$21,886 to \$26,051 among 45-54 year olds; \$22,355 to \$24,141 among 55-64 year olds. Discounting each of these back to the viewpoint of a 21 year-old considering 4 years of college, the estimated value of a college degree would have increased by \$78,649 over the period 1980/82 to 1992, using a 6 percent

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<sup>14</sup>All figures in this paragraph have been converted to \$1990 using the GDP deflator.



discount rate.

Of course, not everyone could expect to finish a four-year degree, particularly those on the margin of college entry. However, the present value of completing 1-3 years of college would also have increased by a sizable \$47,574 using a similar method.

Although parents did seem to respond to the estimated increase in the present value of earnings differentials earned by college graduates, the increase was only about as large as we would have expected from a much smaller increase in tuition. Either people are hypersensitive to tuition or they are making a much more conservative estimate of the future value of a college degree than a cross-section estimate would suggest. In either case, it would be important to attempt to reconcile the large estimates of the impact of tuition differences, with the seemingly more muted response to the rise in the value of a college education over time.

### *Borrowing Constraints?*

As pointed out by Gary Becker in his classic volume, *Human Capital*, the capital market for college investments is likely to be imperfect. Potential college entrants have little collateral to provide to investors. And, as a result, without contracts allowing for indentured labor, there is no way for lenders to force college graduates to earn up to their potential. Families are likely to be in the best position to do so (although as any parent would testify, even their points of leverage are limited). Those with greater family resources are likely to have the greatest access to such capital.

The federal government has attempted to create such a market, by providing a federal guarantee on loans made to qualified students attending qualified institutions. However, the

solution is incomplete. The most a student can borrow under the federally guaranteed student loan programs is \$2625 their first year in college, \$3500 the second year and \$5500 for subsequent undergraduate years. With the average tuition at public two-year and four-year institutions and at private four-year institutions being \$1600, \$3200 and \$14,500 respectively in 1998-99, such loan limits may be sufficient to pay tuition expenses at some institutions, but generally fall well short of the full cost of attendance, which would include foregone earnings. Beginning in 1993, a students' parents could borrow to cover the combined cost of tuition and room and board costs for a student-- but payments on such parental loans begin immediately, limiting their usefulness to those parents with insufficient cash flow. Although parental loans have accounted for much of the growth in loan volume over time, a small share of parents have taken advantage of such loans.

The large differences in college-going by family income among those with similar test scores and the greater sensitivity of low-income youth to tuition differences would be consistent with borrowing constraints. However, they would be consistent with other explanations as well. For instance, a single test score is likely to be an imperfect measure of a students' academic preparation. Observed differences in college-going by family income among students with similar test scores may simply reflect unmeasured differences in academic preparation between high and low-income youth. Cameron and Heckman (1998) report that with a sufficiently general allowance for family background selectivity with the NLSY, one could not reject the hypothesis that the estimated effect of parental income is zero. Moreover, Keane and Wolpin (2000) argue that borrowing constraints are not necessary to produce an interaction between tuition sensitivity and parental income.

A recent literature has suggested that those on the margin, whose decisions about entering college are influenced by such things as proximity to college and college costs, have higher than average payoffs to college. Such results would also be consistent with borrowing constraints, since only those with higher-than-average returns to college would have surmounted the barriers presented by borrowing constraints to attend. In the presence of borrowing constraints, Lang (1997) and Card (1995a) point out that the estimated payoff to college should be higher for those on the margin, since their cost of borrowing funds would be higher. Recent instrumental variable estimates using geographic distance to college to estimate payoff to college (Kane and Rouse (1994) and Card (1995)) have found that those on the margin, whose decisions about college are influenced by such factors, do tend to exhibit higher marginal returns. This would be consistent with the presence of borrowing constraints.

A recent paper by Cameron and Taber (2000) takes issue with such an interpretation of the instrumental variable results. They argue that borrowing constraints are more likely to be binding with respect to direct costs of college-- such as tuition and transportation costs-- than with respect to foregone earnings. They proceed by comparing the instrumental variable estimates one finds using proximity to college and the average earnings of high school graduates in one's county as two different sources of variation in college costs. In fact, they do not find higher payoffs to college when using college proximity as an instrument than when they use foregone earnings as an instrument.<sup>15</sup> They cite this as evidence against the presence of borrowing constraints.

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<sup>15</sup>They also report the results from a structural model which also uses the same assumption for identification, that is, that borrowing constraints should apply to direct costs and not to indirect costs.

However, it is not clear why Cameron and Taber would expect borrowing constraints to apply to direct costs and not to at least some portion of the cost of foregone earnings. Suppose that in the absence of borrowing constraints, one would be consuming at a particular level. (For example, suppose one had a dependent spouse or child, one would face substantial costs of feeding and clothing them while in school). If one could not finance both one's tuition and that desired level of consumption, then one is liquidity constrained. In fact, in *Human Capital*, Becker (1962) discussed the symmetry of direct costs and foregone earnings in families investment decision.

A final piece of evidence that may be useful in identifying the potential importance of borrowing constraints is the difference in timing of college entry in high and low tuition states. Kane (1996) finds that youth graduating from high school in states with higher levels of tuition for state residents at public colleges in the state (presumably the least cost alternative for most students) tend to enter college later. This too would be consistent with borrowing constraints, because in the absence of borrowing constraints, students would want to complete their educational investments as early in life as possible. The basic reasoning is as follows: by delaying a year, one is delaying costs as well as benefits. If, for a particular individual, the benefits to college are greater than the costs of college, then the costs of any delay in terms of deferred benefits must exceed the benefits of a delay in terms of any deferred costs. As a result, both delayed entry and part-time enrollment, may themselves be prima facie evidence of borrowing constraints. The fact that delayed entry is more common in high tuition states provides further corroboration for such an interpretation.

However, as above, there may be alternative explanations for the observation of delayed

timing in high-tuition states. For example, if labor market experience after high school provides some information regarding opportunity costs and the potential payoff to college, students in high tuition states may be more eager to collect such information before making the investment in college than those in low-tuition states, since the cost of learning whether or not one is “college material” by entering college first is lower. Such an explanation may also predict delayed entry in high tuition states.

In summary, even though there are a number of pieces of evidence that would be consistent with borrowing constraints, it is difficult to find a definitive test of the existence of borrowing constraints in the literature. In each case, there are alternative explanations for the same facts, which would not require borrowing constraints to be part of the story. In this regard, the debate over borrowing constraints is similar to the debate over whether the payoff to educational attainment is a payoff to concrete skill or a payoff to the signal provided by that skill. Although the answer is fundamental to any consideration of the social benefits of further investments in training, many pieces of evidence would be consistent with either interpretation.<sup>16</sup>

#### **IV. Poor Information about College Costs and College Prospects**

The decision to attend college poses increasingly high stakes for parents and students. An important role of the financial aid system is to send clear signals to help students and parents plan for college. However, it is remarkable how inaccurate students’ perceptions are regarding their college prospects, even as late as their senior year in high school.

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<sup>16</sup>Weiss (1996) provides explanations for the same set of empirical findings that would involve either education as a skill or education as a job market signal.

During the spring of their senior year in high school, student respondents in the NELS survey were asked to report “As things stand now, how far in school do you think you will get?.” Table 4 presents a cross-tabulation of student responses to that question along with their subsequent postsecondary enrollment over the 2 years following graduation. It is striking that 42 percent of those who expected to complete “some college” and 64 percent of those who expected to attend a vocational, trade or business school had not enrolled in a postsecondary institution 20 months after high school. Moreover, only 57 percent of those who expected to finish a bachelor’s degree and 72 percent of those who expect to finish a graduate degree had ever attended a 4-year college within that time. Indeed, 16 percent of those expecting a bachelor’s degree and 10 percent of those expecting a graduate degree did not attend any postsecondary institution 20 months after high school.

#### *Lessons from the COACH Project in Boston*

Funded by the Andrew W. Mellon Foundation, the COACH project brings graduate students from Harvard University into 3 high schools in Boston to help youth submit college and financial aid applications. In October of 2000, the project surveyed students in 3 high schools in the Boston Public School system as well as students in 2 suburban high schools (Concord-Carlisle and Wellesley high schools). As portrayed in Table 5, the students in the suburban and Boston Public School samples were quite different: while 75 percent of the Boston Public School students were Latino or black, non-Hispanic (31 percent Latino and 44 percent black non-Hispanic), only 9 percent of the suburban students fell into either group (3 percent Latino and 6 percent black non-Hispanic); while only 22 percent of the Boston Public School students

had a parent who was a college graduate, 87 percent of the suburban youth had a parent who was a college graduate (indeed, 60 percent of the suburban youth had a parent with a graduate degree).

Yet, despite the differences in background, Table 6 reports that students maintained similar plans for postsecondary enrollment as late as the fall of their year in high school. In October of their senior year in high school, students were asked whether they planned to attend postsecondary schooling in the fall of 2001. They were also asked how much education they thought they would eventually complete. Virtually all of the suburban students planned to attend postsecondary institutions (97%), with nearly all of these planning to attend 4-year institutions. A similar proportion of the Boston Public School students reported that they planned to attend postsecondary institutions (94%), although not all were planning to attend 4 year schools (9 percent planned to attend vocational, trade schools and 17 percent planned to attend community colleges). A vast majority of both groups planned to complete at least a bachelor's degree (68 percent of the Boston Public School students and 94 percent of the suburban students).

Yet, the two groups differed dramatically in the extent to which they had taken concrete steps to prepare for the transition from high school to college. The results in Table 7 were limited to those who reported that they planned to attend a four-year institution the following fall. While 97 percent of the suburban students had already taken the SAT by October, only one third of the Boston Public School students had taken the test. While nearly two-thirds of the suburban students had spoken with a guidance counselor 4 or more times about their college choices over the past year, only a quarter of the Boston Public School students had. While 38

percent of the suburban students had already applied to a college in October, less than half of as many of the Boston Public School students had applied early. While 78 percent of the suburban students had visited a college, only 28 percent of the Boston Public School students had. While 91 percent of the suburban students reported that they already had an application for the institution they were “most likely to attend”, only 39 percent of the Boston Public School students had. Although the two groups had similar aspirations, the suburban youth were much more successful in identifying and executing the concrete tasks required to realize those aspirations.

### *Overestimating the Cost of Higher Education*

Families and students report that they are quite concerned about the costs of higher education. A 1998 survey of 2000 adults between the ages of 21 and 65 sponsored by the American Council on Education found that “the cost of a college education” was among parents’ top five worries about their children’s welfare, second only to worries about their children using illegal drugs.<sup>17</sup> The proportion of Americans worrying about the cost of higher education (65 percent) was higher than the proportion worrying about health care for their children (55 percent) or the quality of public schools (55 percent). Yet, in that poll, the public greatly overestimates the costs of college tuition. Their estimated cost of in-state tuition at a community college (\$4026) and a four-year college (\$9694) was roughly triple the actual average cost of tuition at such institutions at such institutions (\$1501 at community colleges and \$3111 at four year colleges).

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<sup>17</sup>American Council on Education (1998).



The COACH program in Boston found similar results when it surveyed students regarding the estimates of tuition at several local institutions. Table 8 reports student responses to the following question:

“About how much do you think it costs to attend the following colleges full-time per year? (Think of the cost of full tuition. Do not adjust for financial aid. Do not include housing dormitory fees or food.)”

Students were then asked to check one of a number of categories of tuition amounts, reported in Table 8. Even though the actual tuition at Bunker Hill Community College in the fall of 2000 was \$3,140, only 9 percent of the suburban students and 13 percent of the Boston Public School students got the answer right. The tuition at the University of Massachusetts-Boston was \$4,222 in the fall of 2000. Yet only 6 percent of the suburban students and 8 percent of the Boston Public School students identified the cost correctly. Using the mid-points of each of the categories and a value of \$25,000 for those estimating the costs to be above \$20,000, the mean response for both groups was roughly twice the actual tuition at Bunker Hill Community College and three times the actual tuition at the University of Massachusetts-Boston.

#### *Youth Perceptions of the Payoff to College*

As part of the COACH survey, students were also asked to report how much they thought they would earn with and without a college degree. Specifically, students were asked to respond to the following questions:

“About how much money do you think you would earn per year (or per hour) if you did not go to a vocational/trade school or college and worked full-time?”  
(Next year and at age 25)

“About how much money do you think you would earn per year (or per hour) if you graduated from a 4-year college/university?”  
(At age 25)

The responses of both groups of students are reported in Table 9. Table 9 also reports the actual wages such workers working full-time, full-year in the Boston metropolitan area in the CPS from 1996-99. Three facts reported in Table 9 are particularly striking. First, despite their dramatically different backgrounds, the two groups of students had remarkably similar expectations of future wages, at the median and above. The 50th, 75th and 90th percentiles were remarkably similar for the two groups at all three combinations of educational attainment and age. The Boston Public School (BPS) students seemed to be slightly more pessimistic at the 10th and 25th percentiles. Second, the wage expectations of both groups as high school graduates working full-time immediately out of high school were quite similar to the actual. The wage expectations of the suburban youth were generally within \$3,500 of the actual earnings of high school graduates at the 10th, 25th, 50th, 75th and 90th percentiles. Third, both groups entertained inflated expectations of their earnings at age 25, particularly as college graduates. The median expectation of both groups is that they would earn close to \$30,000 per year as high school graduates-- roughly \$7,000 more than the actual earnings for high school graduates in the Boston area at that age. Their expectations were even more out-of-line for college graduates, with both groups expecting to earn \$50,000 working full-time per year as college graduates as college graduates-- considerably more than the \$33,843 median in the Current Population Survey. In other words, both groups seem to overstate the payoff to educational attainment as well as to experience on the job.

Table 10 report the distribution of the present value of a college degree implicit in

students' responses to the questions about tuition and expected earnings. (Several assumptions were necessary to do so: that all students were using a discount rate of 6 percent, that students were not expecting any financial aid from colleges or from their parents and that the absolute value of the earnings gap between high school and college remains constant for the remainder of their careers.) The suburban youth were slightly more sanguine about the payoffs to attending college, with 76 percent of youth reporting wage and tuition expectations consistent with a positive present value of a college degree. In contrast, 68 percent of the Boston Public School youth made responses that implied a positive present value of a college degree..

The bottom of Table 10 reports the cross-tabulation of students' stated educational plans with an indicator of whether their answers implied a positive or negative payoff to college. Interestingly, for the Boston Public School students, one could strongly reject the hypothesis that there was no correlation between intentions and beliefs about the payoff to college. Holding optimistic expectations regarding the payoffs to college seemed to be positively associated with a student's plans to attend college. However, for the suburban students, one could not reject the hypothesis that their educational plans were independent of their beliefs about the payoff to a college degree. This reflects the fact that virtually all of the suburban youth reported that they planned to complete a bachelor's degree, even though three-quarters of them seemed to believe it was a worthwhile investment.

One hypothesis to account for the findings in Table 10 is that the locus of the decision for students considering college was different for the suburban and the BPS students. For the suburban youth, it was their parents who were making the decision about whether or not the youth should be attending college. Regardless of whether their children agreed, parents could enforce

this judgement by subsidizing the cost of a college education. In contrast, because their parents are less likely to be able to help pay for college, it is the beliefs of the students themselves that drives the decisions being made by the Boston Public School students. Of course, this is all conjecture, but it suggests that there is much still to be learned regarding the way in which different students think about the decision to enroll in college.

### *Parental Saving for College*

In light of the fact that students and parents seem to overestimate the cost of college tuition, it is ironic that a large share of parents admit to having done nothing to prepare financially for their children's education. When their children were in 8th grade, parents of the NELS sample were asked "Have you or your spouse/partner done anything specific in order to have some money for your eighth graders education after high school?" The question was asked only of those who reported earlier in the survey that they expected their 8th grader to go on to additional education beyond high school. Later, when their children were in 12th grade, parents were asked "What grade was your teenager in when you began to prepare financially for his/her education after high school?". Again, the question was asked only of those who reported that their children planned to continue their education after high school.

Table 11 reports parents' responses to those questions by family income quartile. Less than half (48.7%) of the parents reported having begun to prepare financially for their children's postsecondary education when their children were in 8th grade. Moreover, there were large differences in preparation by family income: while 73 percent of parents of 8th graders from the top income quartile report having begun to prepare financially, only 31 percent of those from the

bottom income quartile reported having begun to prepare.

However, while their children are in high school, an increasing number of parents do begin to prepare. For instance, the proportion reporting to have begun to prepare financially rose from 49 to 71 percent as their children progressed from 8th to 12th grade. (Note also that the increases in the proportion of parents reporting having begun to prepare were also larger for the top 3 income quartiles than in the bottom income quartile.) Yet, even during the spring of their children's senior year in high school, 29 percent of parents report that they have not yet even begun to prepare financially for their children's education. (Recall that this table is limited to those parents who are reporting that their children do plan to continue their education.)

Parents who reported having begun to prepare financially were later asked "About how much have you set aside for your teenager's future educational needs?". When their children were in 8th grade, only 20 percent of those parents who reported having begun to prepare financially had set aside more than \$10,000, implying that less than 10 percent of all parents of 8th graders had set aside that much (.203\*.487). The proportion having set aside more than \$10,000 was slightly higher when their children were in 12th grade: 24.6 percent of those having begun to prepare or 17 percent of all parents of 12th graders (.246\*.706).

There were very large differences in financial preparation by family income quartile. By the time their children were in 12th grade, 89 percent of parents in the top income quartile had begun to prepare financially and 62 percent of these report having set aside more than \$10,000, implying that 55 percent of all top income quartile parents had set aside more than \$10,000 for their child's postsecondary education. In the bottom income quartile, only 46 percent had begun to prepare and 5 percent of these had set aside a substantial sum, implying that roughly 2 percent

had set aside more than \$10,000 for their child's education.

On one hand, the lack of saving by parents imposes important political constraints on higher education finance policy. For instance, state legislators are under considerable pressure to keep tuition low to maintain affordability for middle income families with little savings. On the other hand, as long as tuition is low, families have little reason to save for college. Three trends are upsetting that historical balance: First, as college enrollment rates rise, more families are eager to take states up on their generous offers of low tuition. Second, the costs per student have been rising faster than inflation, at least partially because the going wage for the type of highly educated labor hired by colleges have been rising faster than other wages. Third, the children of the baby boom are reaching college age. The size of the college age population is expected to rise by roughly a quarter over the next 20 years. The increases are expected to be much larger in a few states such as California, which is anticipating a 50 percent rise in the size of college-age cohorts.

During the 1980's, concern over the impending retirement of the baby-boom cohort and their apparently low levels of retirement savings led to a number of policies intended to encourage savings. A large literature has developed estimating the impact of these policies on savings. The recently enacted Bush tax cut plan includes several important new incentives to encourage greater savings for college. The literature on retirement savings may be useful in attempting to anticipate the impact of these policies on parental savings for college.<sup>18</sup>

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<sup>18</sup>For a survey of the retirement savings literature, see Engen, Gale and Scholz (1996), Hubbard and Skinner (1996) and Poterba, Venti and Wise (1996).

## V. Conclusion

The U.S. system for financing higher education is at least as misunderstood today as the health care finance system was 20 years ago. Not only are parents paying for their child's college education in more ways than they realize-- through direct subsidies to institutions, through financial aid programs to college, through generous new tax benefits for college-- the impact of each of those subsidies on the decisions of various groups of youth is not well understood by policymakers. In 2003, it will have been 3 decades since the Pell Grant program was established, yet differences in college-going by family income remain wide and, according to some recent evidence, appear to be widening. The higher education policy debate has become so bogged down with incremental questions involving issues such as changes in the need-analysis formula to notice the bigger questions: Why is it that there was no apparent impact of the Pell Grant program's establishment on college enrollment rates of low-income youth? What is the "bang-for-the-buck" achieved with different types of public subsidies-- across-the-board subsidies to keep tuition low, Pell Grants, loan subsidies? Why do so few parents save for college and how are their decisions influenced by state and federal policies? We will not make progress in closing the gaps in college enrollment by family income unless we have some of the answers to such questions.

The answers to these questions may have implications far beyond the higher education sector itself. We usually think about higher education policy as merely responding to the labor market-- as if the price of college labor were dictated exogenously by technological factors. As a result, despite a brief flourishing during the Seventies, the economics of higher education has typically been viewed as a quiet backwater in the larger field of labor economics, of interest primarily to college administrators and financial aid specialists. However, recent evidence

suggests that higher education policy may have played a role in contributing to the rise in the payoff to educational attainment in the first place. It is a field of vital importance, not only to those seeking to understand the rise in the payoff to educational attainment, but also to policymakers formulating our national response to the change in the payoff to a college degree.



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**Table 1.**  
**Proportion of Students from Families in Each Income Quartile**  
**Who Enroll in Postsecondary Schools Within**  
**20 Months of High School Graduation**

Parental Income Quartile	Any Postsecondary Schooling:			
	<i>Total</i>	Vocational, Technical	2-Year College	4-Year College
Class of 1980/82				
Bottom	<i>0.57</i>	0.12	0.16	0.29
3rd	<i>0.63</i>	0.11	0.19	0.33
2nd	<i>0.71</i>	0.10	0.22	0.39
Top	<i>0.80</i>	0.06	0.19	0.55
Total:	<i>0.68</i>	0.10	0.19	0.39
Class of 1992				
Bottom	<i>0.60</i>	0.10	0.22	0.28
3rd	<i>0.70</i>	0.07	0.25	0.38
2nd	<i>0.79</i>	0.06	0.25	0.48
Top	<i>0.90</i>	0.05	0.19	0.66
Total:	<i>0.75</i>	0.07	0.23	0.45

Note: Based upon tabulations of the High School and Beyond Survey and National Education Longitudinal Study of 1992. Parental income was reported by parents. Figures were reported in Ellwood and Kane (2000).

**Table 2. Estimated Impact of a \$1000 Change in Direct Cost of College on College Entry Rates College (per \$1000 1990)**

Study:	Estimate:	Brief Description:
<b>Literature Before 1987:</b>		
Leslie and Brinkman (1987)	-.05 (.005)	Literature review of 25 articles
<b>Based on Between-State Differences in Tuition:</b>		
Cameron and Heckman (1999)	-.07 (.02)	State differences in public tuition charges. (NLSY)
Kane (1994)	-.05 (.01)	State differences in public tuition charges. (October CPS)
Kane (1999)	-.05 (.01)	State differences in public tuition charges. (NELS)
<b>Based On Non-Traditional Financial Aid:</b>		
Dynarski (1999)	-.04 (.02)	End of Social Security Student Benefit Program
Dynarski (2000)	-.03 (.02)	Hope Scholarship Program in Georgia
<b>Before-After the Pell Program was Established in 1973:</b>		
Hansen (1983)		No disproportionate growth by low-income. (Oct. CPS)
Kane (1994)		No disproportionate growth by low-income. (Oct. CPS)
Manski (1993)		No disproportionate growth in BA Completion by Low-Income (NLS-72 and HSB)

**Table 3.**  
**Estimated Effects of Rise in Public 4-Year Tuition on**  
**Racial and Income Gaps in College-going**

Estimated Impact of a \$1000 Change in Tuition (\$1988) on Likelihood of College Attendance Among 18-19 Year Old H.S. Graduates			
	<b>Blacks</b>	<b>Whites</b>	
Bottom	-0.085	-0.046	
3rd	-0.088	-0.038	
2nd	-0.086	-0.030	
Top	-0.081	-0.012	
Changes in College Enrollment: (Relative to Bottom Quartile) (Based upon Tuition Changes Alone)			
	<b>Predicted</b>	<b>Actual</b>	<i><b>Proportion Explained</b></i>
3rd	0.005	0.040	<i>0.131</i>
2nd	0.011	0.050	<i>0.222</i>
Top	0.024	0.070	<i>0.347</i>
Changes in College Enrollment by Race: (Relative to Black non-Hispanics) (Based upon Tuition Changes Alone)			
	<b>1980-92 Predicted</b>	<b>Actual</b>	<i><b>Proportion Explained</b></i>
Whites	0.045	0.088	<i>0.511</i>

Note: The estimated enrollment effects of tuition increases are drawn from Thomas J. Kane, "College Attendance By Blacks Since 1970: The Role of College Cost, Family Background and the Returns to Education" *Journal of Political Economy* (1994) Vol. 102, No. 5, pp. 878-911.

**Table 4. Post-secondary Enrollment within 20 Months of H.S. Graduation  
by Student Expectations as H.S. Seniors**

	Enrollment within 20 months of high school: (Row Percent)				Percent of Seniors:
	None	Private <4yr, Public <2yr	Public 2-Year	4-Year (Public or Private)	
“As things stand now, how far in school do you think you will get?”					
H.S. Only	.904	.015	.069	.011	6.5%
Vocational, Trade or Business School	.640	.103	.216	.040	11.0%
Some College	.417	.080	.366	.138	14.0%
4 or 5-Year Degree	.156	.028	.248	.568	35.4%
Graduate School	.100	.013	.171	.717	33.1%
Total	.276	.038	.224	.462	

Note: Based upon author’s tabulation of the NELS 2nd and 3rd Follow-up.

**Table 5.**  
**Demographic Characteristics of Suburban and**  
**BPS Samples**

	Suburbs (Wellesley, Concord-Carlisle)	Boston Public Schools (Boston, Dorchester, Charlestown)
<u>Race/Ethnicity:</u>		
Hispanic	3%	31%
Black, Non-Hispanic	6	44
Asian, Pacific Islander	7	15
Native American	1	0
White, Non-Hispanic	82	10
<u>Parental Education:</u>		
HS Dropout	1%	27%
HS Graduate	4	27
Some College	8	24
College Degree	27	14
Graduate Degree	60	8
<b>Sample Size</b>	<b>277</b>	<b>286</b>



**Table 6.**  
**Postsecondary Plans & Contact with**  
**Others Regarding College Plans**

	Surburbs (Wellesley, Concord-Carlisle)	Boston Public Schools (Boston, Dorchester, Charlestown)
<u>Plans for Fall 2001:</u>		
Vocational/Trade School	0%	9%
Two-Year College	2	17
Four-Year College	95	68
<i>Total Some Postsecondary:</i>	<i>97</i>	<i>94</i>
 <u>Plans for Eventual Attainment:</u>		
BA or More	94	68
MA	46	12
MD or JD	10	9
PhD Degree	9	6
 Sample Size	 302	 268

**Table 7.**  
**Specific Activities**  
**Among Those Planning to Attend a 4-Year College**

	Surburbs (Wellesley, Concord-Carlisle)	Boston Public Schools (Boston, Dorchester, Charlestown)
Taken SAT/ACT	97%	34%
Met With Guidance Counselor 4+ Times	61	23
Already Applied to Any College	36	18
Visited a College	78	28
Already have an application from institution “most likely” to attend.	91	39

Note: Based upon Fall 2000 baseline survey conducted by COACH program.

**Table 8.**  
**Student Estimates of Tuition at Various Institutions**

“About how much do you think it costs to attend the following colleges full-time per year? (Think of the cost of full tuition. Do not adjust for financial aid. Do not include housing, dormitory fees or food.”

	Bunker Hill Community College		University of Massachusetts-Boston	
	Suburbs	BPS	Suburbs	BPS
\$0-499	3%	3%	0%	0%
\$500-999	5	6	0	1
\$1,000-1,999	9	13	2	3
\$2,000-2,999	14	17	2	4
\$3,000-3,999	9	13	3	4
\$4,000-4,999	12	8	6	8
\$5,000-7,499	14	13	14	11
\$7,500-9,999	15	8	18	8
\$10,000-14,999	11	8	31	22
\$15,000-19,999	6	7	18	17
\$20,000 +	1	3	5	21
Implied Mean using Midpoints of Categories	\$6,312	\$6,055	\$11,191	\$12,730
<b>Actual</b>	<b>\$3,140</b>		<b>\$4,222</b>	

Note: Based upon results of COACH survey of students in the Fall of 2000.

**Table 9.**

**Student Estimates of Earnings of H.S. and College Graduates**

“About how much money do you think you would earn per year (or per hour) if you did not go to a vocational/trade school or college and worked full-time?”

(Next year and at age 25)

“About how much money do you think you would earn per year (or per hour) if you graduated from a 4-year college/university?”

(At age 25)

	As h.s. graduate next year			As h.s. graduate at age 25			As college graduate at age 25		
	Suburb	BPS	CPS	Suburb	BPS	CPS	Suburb	BPS	CPS
10th	\$10000	\$4,000	\$9,826	\$18,000	\$10,000	\$15,186	\$30,000	\$20,000	\$17,485
25th	15,000	10,000	12,817	20,000	20,000	18,478	40,000	30,000	24,931
50th	18,600	18,000	16,341	30,000	28,900	23,430	50,000	50,000	33,843
75th	21,500	24,000	21,161	40,000	40,000	29,830	70,000	67,500	45,124
90th	30,000	30,000	26,702	60,000	60,000	38,770	100,000	100,000	62,655

Note: CPS data are for full-time workers in the Boston CMSA in the Merged Outgoing Rotation Group data. They were assumed to be working 52 weeks per year.

**Table 10.**  
**Implied Estimates of Present Value of College Degree**

Implied PV of College Degree (Assuming constant absolute earnings gap after age 25, no financial aid and 6 percent discount rate.)		
	Suburbs	BPS
10th percentile	-\$106,401	-105,685
25th percentile	4,186	-32,133
Median	137,357	92,163
75th percentile	337,122	283,274
90th percentile	657,101	708,211
% > 0	76	68

**Cross-Tabulation of Implied Present Value and Educational Plans**

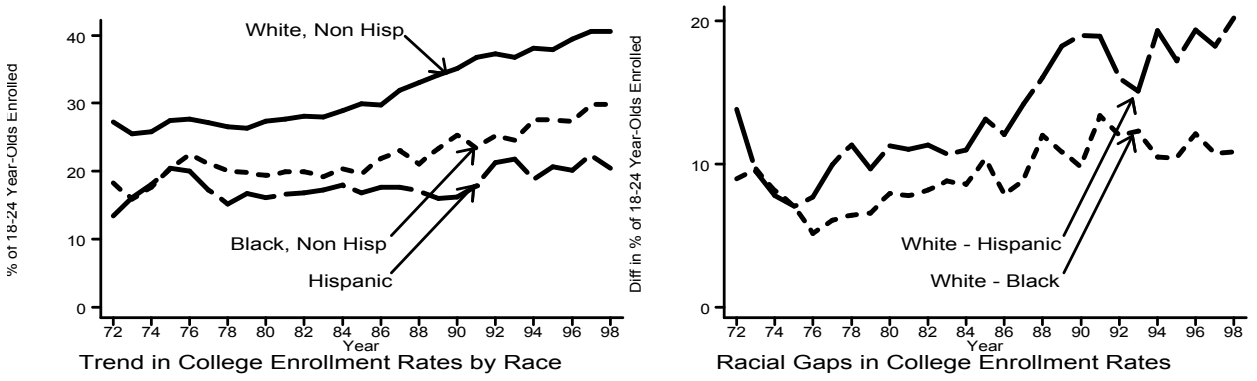
	Suburbs (Concord-Carlisle, Wellesley)			BPS (Boston, Charlestown Dorchester)		
	Don't Plan BA	Plan BA	Total	Don't Plan BA	Plan BA	Total
PV < 0	1	42	43	23	24	47
PV \$ 0	1	133	134	18	82	100
Total	2	175	177	41	106	147
p-value on $\chi^2$ of Independence	.394			.000		

**Table 11.**  
**Proportion of Parents Reporting Having**  
**Begun to Prepare Financially for Their Children's Postsecondary Education**

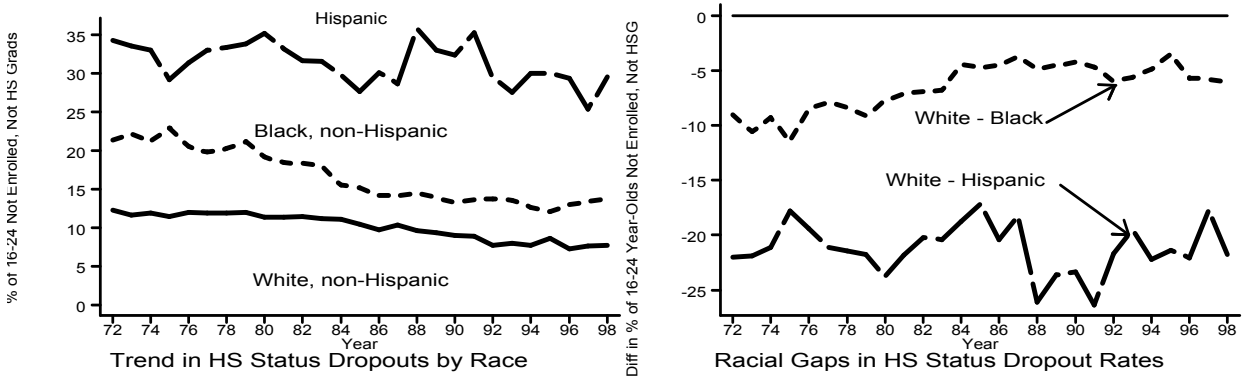
	Proportion Reporting Having Begun to Prepare:		<i>Of Those Preparing,</i> Proportion Having Set Aside >\$10,000	
	Child in 8th Grade	Child in 12th Grade	Child in 8th Grade	Child in 12th Grade
Bottom Income Quartile	.308	.464	.089	.047
Income Quartile 3	.390	.612	.102	.010
Income Quartile 2	.550	.807	.173	.217
Top Income Quartile	.731	.893	.432	.615
Total:	.487	.706	.203	.246
Sample Size	9274	8925	4145	6171

Note: Based upon author's analysis of the NELS parent survey. Estimates were weighted using the panel weight. The questions were asked only of those who expected their child to be attending postsecondary schooling.

**Figure 1. College Enrollment Rates of 18-24 Year-Olds by Race (1972-99)**

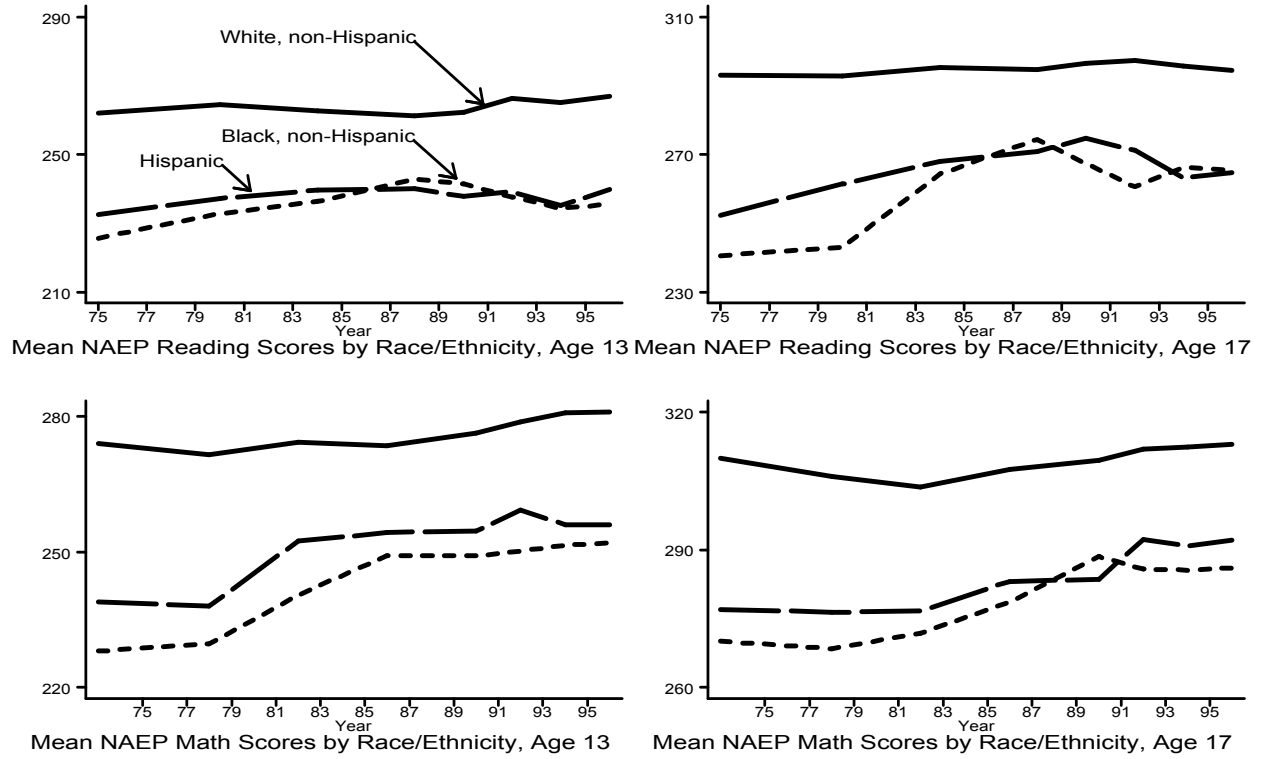


**Figure 2. H.S. Status Drop-Out Rates Among 16-24 Year-Olds by Race (1972-99)**



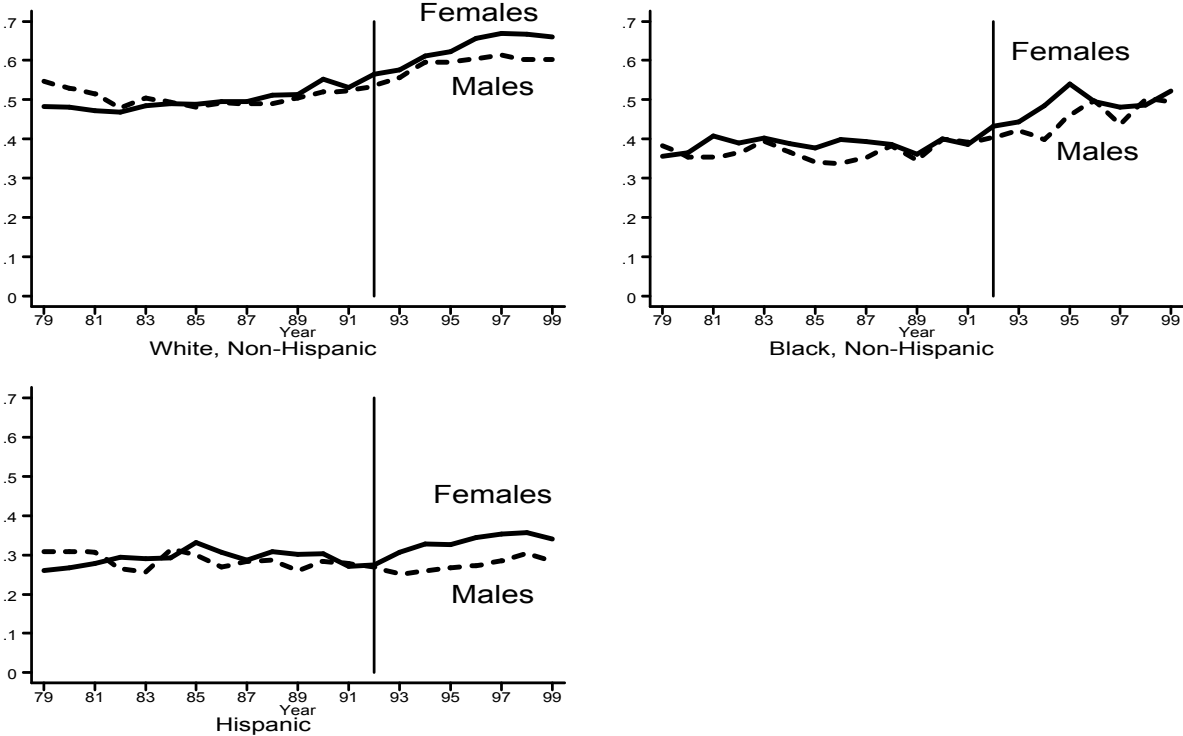


**Figure 3. NAEP Test Scores by Race, 1974-99**



Note: Scale has been adjusted for each graph to be equal to 2 standard deviations.

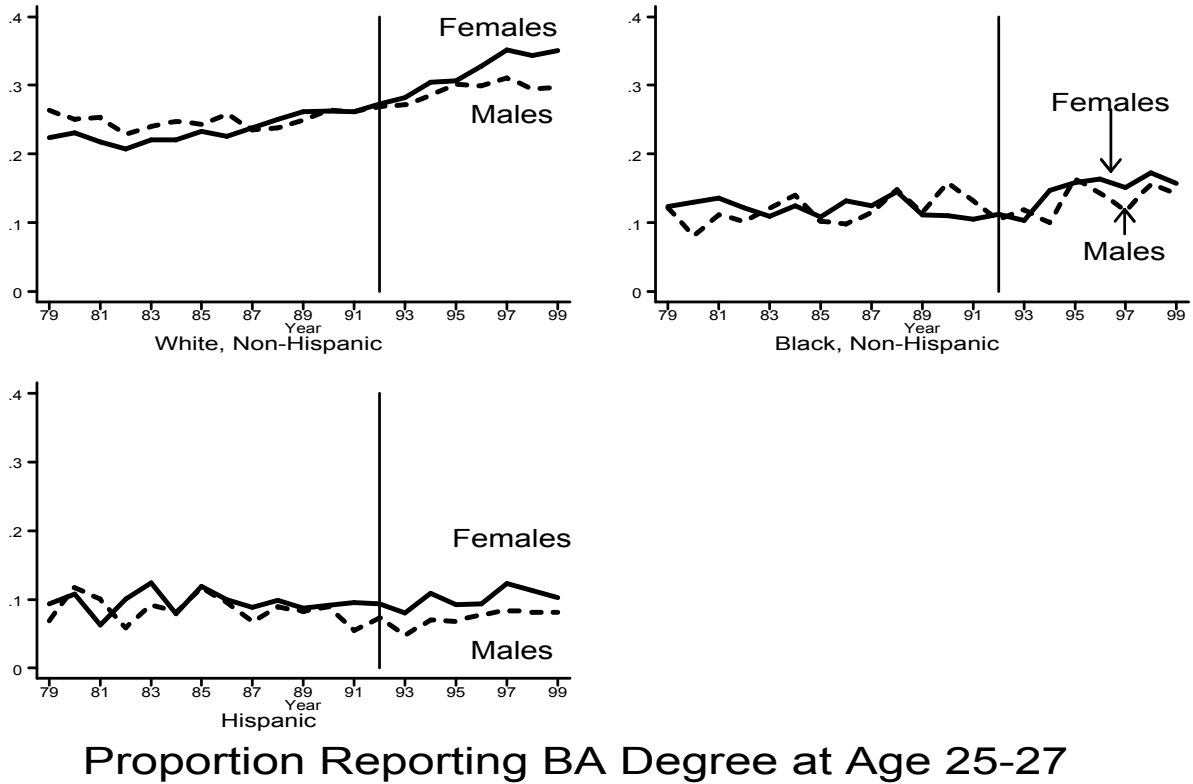
**Figure 4a. Trends in Educational Attainment by Race and Gender**



**Proportion Reporting Any College at Age 25-27**

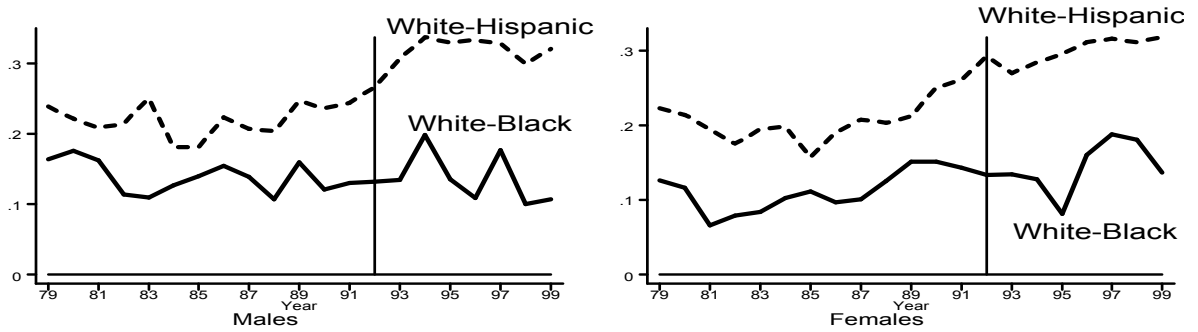
Note: Based upon Author’s tabulation of CPS Outgoing Rotation Groups. The educational attainment question changed format in 1992.

**Figure 4b. Trends in Educational Attainment by Race and Gender**

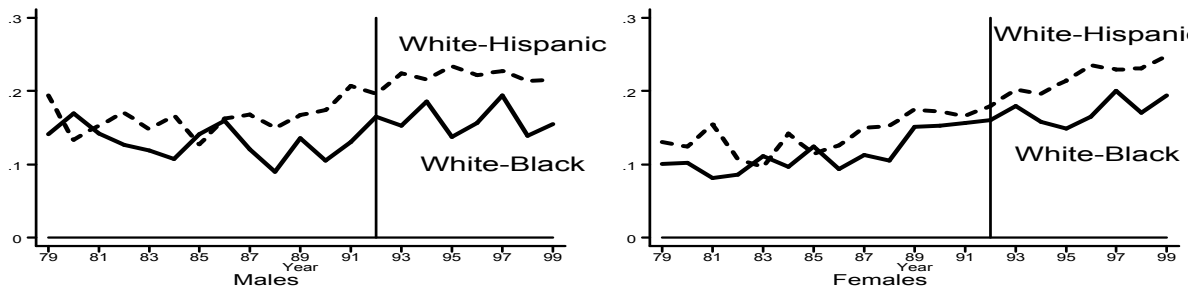


Note: Based upon Author's tabulation of CPS Outgoing Rotation Groups. The educational attainment question changed format in 1992

**Figure 4c. Trends in Educational Attainment by Race and Gender**

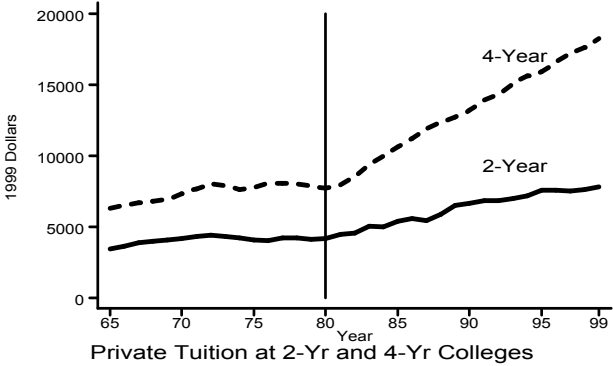
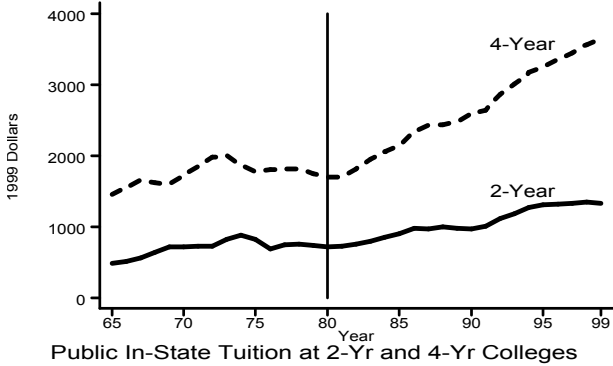


**Racial Gaps in Reporting Any College Age 25-27**



**Racial Gaps in BA Completion by Age 25-27**

**Figure 5. Trend in Real Tuition Levels at Public and Private Institutions (1999 Dollars)**



**Figure 6.**  
**Distributions of Expected Earnings in**  
**Boston Public Schools and Suburban Schools From COACH Survey**

